Appendix F								
		App F	General	0		Dec	DD	The Draft RI and BRA Reports will need to incorporate Round 3 data into the HHRA for all exposure media for both the screening for COPCs and for the Risk Characterization for the RI HHRA. This should be straightforward for most data sets The one issue that might be of concern is whether Round 1 and Round 3 biota data are similar enough to be combined when calculating site-wide EPCs and if this decision will need to be made using some type of statistical analysis.
		App F	General	0		CE	DD	The Uncertainty Section of the RD2 HHRA states that, "additional evaluation of the method used to estimate non-detects may be warranted" in those cases where the detection limits were above ACGs and the chemical was detected infrequently. The latest version of PRO UCL (Version 4) recommends using statistical techniques to deal with non-detects as opposed to assuming that non-detects are equal to ½ the detection limit as was done in the RD2 HHRA. Rather than performing additional analysis on a subset of the data as discussed in the Uncertainty Section, all calculations for all data should be done using the statistical methods recommended in Pro UCL Version 4 for dealing with non-detected values. Non- detected values that are greater than the maximum detected valueion limit for a given data set should not be included in the EPC calculations. Rather, these values should be included in separate tables and discussed as a part of the Uncertainty Section.
		App F	General	0		CE	DD	A 95% UCL on the mean was calculated for chemicals in most media/biota when 5 or more samples were available. The maximum value was used if fewerless (1 – 4) samples were available. In comments sent to the LWG on several HH technical documents, EPA expressed concern about using so few (5 -10) samples to calculate a 95% UCL on the mean for the EPC. EPA is still concerned about the use of such small data sets (i.e., 5-10) to calculate a 95% UCL on the mean for the EPC. This calculation is dependent upon being able to identify the underlying distribution of the data which is more uncertaindifficult as sample size decreases. Therefore, in the Uncertainty Section, biota EPCs that were calculated using less than 10 samples should be listed in a table by species, location, body type, and chemical. An uncertainty analysis should be included for the major COCs for each scenario/media/biota type that demonstrates how the EPC for each of these samples would differ if the maximum detected values were used for the EPC rather than the 95% UCL on the mean.
		App F	General	0		CE	DD	The Uncertainty Section of the RD2 HHRA states that for biota, "where use of the maximum concentration suggests a potential for unacceptable risks, additional evaluation of the concentration used to represent exposure may be warranted". However, it is not clear what type of evaluation is being referred to. The latest ProUCL guidance and other EPA guidance should be reviewed to determine the acceptable minimum number of samples needed to calculate a 95% UCL on the mean.
		App F	General	0		CE	DD	Willamette River surface water should be considered a potential future drinking water source. For assessing SW as a drinking water source, surface water should be screened against MCLs and EPA Region 6 tapwater PRGs using max values from each sampling site using only integrated water data. The COPCs selected should be evaluated for a drinking water scenario for trespassers, workers, and residents and for inadvertent ingestion from swimming for recreational users. Vertically integrated and transect surface water data should be used; near bottom samples should not be included. A site wide average concentration should be generated.
		App F	General	0		CE	DD	It is unclear whether the maximum consumption rate for shellfish assumed in the risk

								assessment (18 g/day which is a little less than 1 pound per month (one pound in 3.6 weeks)) is sustainable at some or all of the areas where bivalves were collected, now or in the future. EPA believes that sufficient information exists to support the clam consumption scenario. However, EPA acknowledges that an appropriate exposure area should be determined in consideration of water depth (i.e., Nearshore areas) and the area over which a sustainable shellfish harvest consistent with the clam consumption is possible. EPA proposes that the EPC for clams only (not crayfish) be calculated by combining clam composites from approximately a mile on each side of the river. EPA proposes that the selection of composites to be used for calculating each EPC be done jointly by EPA and the LWG. EPA also cautions that although a mile will serve as the starting point for forming composites, best professional judgment should be used in combining composites that are on the boundaries of these mile segments, especially those that have the potential to be impacted by a given source.
		App F	General	0		CE	DD	The HHRA in the RD2 Report includes a risk characterization for the integrated SW samples assuming ingestion of SW as a drinking water source by transients and through inadvertent ingestion by recreational users during swimming. Additional evaluations of SW and all of the TZW evaluations are done in a separate section (Section 6, *Screening of Surface and Transition Zone Water Data)* of Appendix F. EPA does not agree with much of the evaluation done in Section 6.0. The following changes should be made for Appendix F and included in Section 8. Also, alternative flowcharts for SW and TZW are attached (Attachment 1) and should be included in the HHRA: <u>SW as a Drinking Water Source</u> – Scenarios that evaluate the risk from drinking surface water for workers and residents should be added to the CSM and to the RI baseline HHRA. These evaluations can be done using integrated SW samples for selecting COPCs. Region 6 screening levels should be used in place of the tap water PRGs from Region 9 (for non-cancer screening levels assume an HI= 0.1). <u>SW as a Source of Contaminants in Biota</u> – This evaluation should be included in the baseline risk assessment/risk characterization. The maximum concentration of a chemical from all SW data (including near bottom samples) should be used and screened against WQC based upon an ingestion rate of 175 g/day (not 17.5 g/day). For those COPCs selected (all should be listed in the narrative), the sample specific water data should be compared to co-located biota data. If these COPCS are identified as COCs in the co-located biota data, the biota data may be used for evaluating the SW COPCs from this sampling area. If a COPC is not a COC in co-located biota or co-located biota data are not available for a SW sampling location, these chemicals should <u>remain as COPCs</u>~~be flagged as potential COIs~~, identified as a possible data gap for site specific remediation and source control, and discussed in the Uncertainty Section. <u>TZW as a Source to Surface Water to Be Used as a Drinking Water Source</u> – The screening evaluation done in Section 6 should remain in Section 6 rather than be included in the baseline risk assessment and risk characterization and Region 6 screening levels should be used in place of the tap water PRGs from Region 9 (assume HI=0.1 for non-cancer). However, the maximum value from all TZW data, including that from deeper depths (e.g., 90 cm), should used in the screening. The results from the loading estimates and models in Appendix D that are discussed in Section 6 to estimate SW concentrations from TZW COPCS will be reviewed as a part of Appendix D. The conclusions based upon the Appendix D review will be incorporated into Section 6.

								TZW as a Source of Contaminants in Biota – This evaluation should be included in the baseline risk assessment/risk characterization. The maximum value from all TZW data, including that from deeper depths (e.g., 90 cm), should be screened against WQC based upon a consumption rate of 17.5 g/day. EPA does not agree with the analyses in Sections 6.2.1.2 (Derivation of HH WQC) or Section 6.2.1.3 (Applying Adjustment Factors to Screening of TZW Data Against HH AWQC). The specific page by page comments that follow include more in-depth comments on these 2 sections. The following should be done for COPCS that are identified for TZW as a source of contaminants to biota: (1) TZW COPCs that were not analyzed for in biota (e.g., VOCs and cyanide) should be discussed qualitatively, including the uncertainties, remain as COPCs~~flagged as COIs~~, and identified as potential data gaps for site specific remediation and source control. (2) For those TZW COPC that were analyzed for in shellfish, the sample specific water data should be compared to co-located biota data. If these COPCs are identified as COCs in the co-located clam and crayfish data, the biota data may be used for evaluating the TZW COPCs from this sampling area. If a COPC is not a COC in co-located biota or co-located biota data are not available for a SW sampling location, these chemicals should remain as COPCs~~be flagged as potential COCs~~, identified as a possible data gap for site specific remediation and source control, and discussed in the Uncertainty Section. All COPCS identified in TZW and SW in all four of the screenings above should be retained ~~as COI~~ for the RI/FS. In addition, the narrative should include a list of all of the COPCs selected in the initial screen. The CSM should be reviewed to ensure that any needed modifications that might result from evaluation of SW and TZW in the HHRA be incorporated.
		App F	General	0		CE	DD	Diver Scenario – EPA has developed and transmitted a diver exposure scenario to the LWG. This exposure scenario should be utilized in the HHRA.
		App F	General	0		Dec	DD	Further discussion between EPA and the LWG is required regarding how to incorporate a breast milk exposure scenario into the baseline human health risk assessment~~. At this time, it is unclear whether this scenario should be included in the HHRA and, if it is included in the HHRA, how the results should be presented (exposure versus risk), and whether the information should be included in the Risk Characterization Section or the Uncertainty Section.~~
		App F	General	0		CE, NT	DD	The HHRA should avoid use of language that is judgmental unless there are data to support the language. This is especially true for some of the statements made on the exposure assumptions.
		App F	General	0		CE	DD	There are five maps/figures (Figures 5-1 through 5-5) in the RD 2 HHRA that are summaries of parts of the risk characterization for the beach scenarios, in-water sediment scenarios, and shellfish. In our comments or in subsequent meetings with the LWG, we will need to discuss the additional figures needed in the RI HHRA.
		App F	General	0		Edit	DD	Region 10 EPA as well as the PH JSCS now use Region 6 screening levels~~PRGs~~ for screening as Region 9 PRGs are no longer updated. Region 6 screening levels should be used for screening for all media in the HHRA (e.g., beaches, in-water sediments, water media) and in Section 6. The non-cancer screening levels~~PRGs~~ would still be divided by ten.
		App F	1.1	1		CE	DD	Add groundwater (GW) and transition zone water (TZW) to the second sentence after "surface water" and before "or biota" or at least mention analysis.
		App	2.1	2		CE	DD	EPA agreed to evaluation of surface sediments only. However, ~~S~~subsurface sediment

								should be evaluated in areas subject to erosion below the depth of the surface interval and as an external loading term in the contaminant fate and transport model.
		App F	2.1.1	4		CE	DD	Regarding future land use of beaches, it should be noted that current conditions could change and additional risk evaluations may be required (such as evaluating beach areas that are currently restricted as well as the seeps from these beaches ~~(~~[recreational only]). This should be added to the HHRA and addressed through institutional controls such as land use restrictions in the ROD and the 5 year review process.
		App F	2.1.3	5		CE	DD	More discussion is needed as to how the SW sample types summarized in the second paragraph of this section correspond to the map of the SW station locations (map 6.3-1). It's not clear how the different sampling regimes (e.g., peristaltic pump versus XAD and integrated versus near-bottom) match up with amphibian habitat, beaches, and human use areas. The numbers of samples given in the second paragraph also do not seem to match up exactly with the map.
		App F	2.1.3	5		CE	DD	The statement is made that "All Round 2 surface water data were included in the Round 2 HHRA dataset." However, on page 28, Section 3.4.3, it is stated that , "the near bottom samples are not representative of potential human exposures to surface water, which would occur mostly at the water surface and through the water column. As a result, only integrated water column data were used in estimating the surface water EPCs." Section 2.1.3 should include the statement made in Section 3.4.3 that not all water samples results were used. (Also see comments on Tables 2-10 and 6-1 and Page 14, Section 2.4.2).
		App F	2.1.6	8		Edit	DD	Modify the following, "Depuration is a common method for cleansing shellfish that is ~~typically~~ sometimes done prior to human consumption to eliminate the sediment present in the gastrointestinal (GI) tract of the shellfish. The field collected clams were not depurated prior to analysis, and the data are therefore biased towards over predicting human health risks from this exposure pathway for those consumers who depurate before consuming." (Note: This language may need to be modified based upon Round 3 data comparing depurated and non-depurated clams.).
		App F	2.1.7	8		CE	DD	TZW data should be added to this section as it is will be added to the risk characterization. In addition, it should be clear which TZW samples are being used (e.g., data from all depths (e.g., including that from 30 cm) and unfiltered sample results).
		App F	2.2.3	10		CE	DD	TZW are screened in an analysis separate from the RD 2 HHRA (Section 6). It is not clear if the max value of all of the TZW data was used (i.e., filtered or un-filtered). The data set used should be discussed here and in Section 6.2.
		App F	2.2.3	10		CE	DD	Region 9 soil PRGs were used for screening beaches (residential PRGs for recreational, transients, and fishing exposure areas and industrial PRGs for industrial exposure areas) and in-water sediments (industrial PRGs); Region 9 tapwater PRGs were used for screening surface water and groundwater seeps. Region 10 EPA as well as the PH JSCS now use Region 6 screening levels for screening as Region 9 PRGs are no longer updated. Region 6 screening levels should be used for screening in the HHRA. The non-cancer PRGs would still be divided by ten.
		App F	2.2.3	10		CE	DD	In the risk characterization, the risks from the sum of total carcinogenic PAHs should be calculated and added to the tables. This summing should be discussed in this section as this is similar to the TEQ summing.
		App F	2.4.2	14		Dec	DD	Discussion of identification of COPCs for RA for SW. See previous comment on the need to evaluate surface water as a residential/occupational drinking water source to be evaluated quantitatively in the HHRA.
		App F	3.1	16		CE	DD	A statement should be added that the exposure assumptions assume that future land use will be the same as current land use, therefore the risks characterized are based only on current use. If future uses change, exposures and risk may also change.

		App F	3.1	17		CE	DD	The HHRA should address the diver and breast milk scenarios as described in the general comments above.
		App F	3.3.1.1	19		Edit	DD	Delete the words "to non-existent".
		App F	3.3.2.1	21		Edit	DD	Remove the following, "These activities generally occur infrequently".
		App F	3.3.3			Edit	DD	Change "However, contact with surface water would generally be unintentional and infrequent with the possible exception of transients and recreational beach users" to "Two populations expected to potentially have the most frequent contact with surface water are transients and recreational beach users."
		App F	3.3.3.1	22		Edit	DD	Remove the following, "however, there is no evidence that this actually occurs."
		App F	3.3.5.2	23		Edit	DD	After "However, other species may also be consumed" add "For example, in a survey done by the Linnton Community Center, transients were asked about their consumption of fish or shellfish from the Willamette River. These transients reported consuming a large variety of fish, as well as crayfish and clams, and several transients said they ate whatever they could catch themselves or get from other fishers."
		App F	3.3.6			CE	DD	There are no data provided to support the following statement, "However, the available shellfish biomass at locations where shellfish have been found and collected are not sufficient to support ongoing human consumption." Assumptions on available biomass should consider both current use of the site as well as future use, assuming that habitat for shellfish may improve and that remediation of the site may increase public confidence in consuming bivalves~~clams~~. For evaluating current exposure, EPA will accepts the use of a larger exposure area to collect sufficient biomass (see comment on page 70).~~For shellfish, only adult non-tribal consumption was evaluated, not tribal consumption or consumption by children.~~
		App F	3.3.6.1			CE	DD	Much of the language in this paragraph should be removed and the information from the Linnton survey of transients showing that transients consume both crayfish and clams should be added.
		App F	3.4.1	25		CE	DD	The general statement that sampling was not random and therefore is biased high is not supported in all cases. Bias probably exists for the site as a whole, but, is likely minimal for smaller exposure areas within the site.
		App F	3.4.1.1, 3.4.1.2	26		CE	DD	Calculation of a 95% UCL on the mean using a minimum of 5 samples is an issue for in-water sediments for several chemicals at several ½ river miles. As stated in the general comment above, areas with less than the ProUCL recommended 8 – 10 samples should be identified.
		App F	3.4.3.2	28		CE	DD	For recreational exposures, the LWG used only data from the low water sampling event in 2005 to calculate EPCs for the RD2 HHRA rather than from all SW sampling events. EPA had agreed to this in the technical documents. However, to show that this is not a major issue, it should be discussed in the Uncertainty Section using a discussion similar to the following: *Transient exposure can occur throughout the year, so data from three sample collection times were used. Arsenic was the only chemical screened in for this pathway. Table 3-5 shows the site-wide average surface water concentration for the three sampling events as 0.48 ug/L. Table 3-6 shows the arsenic surface water concentration for the summer sampling event (site-wide average) as 0.55 ug/L. Given the similarity of the results, it is acceptable to use the summer value for swimming exposure.*
		App F	3.4.5	30		CE	DD	Please provide the data and evaluation to support this statement, "Even though the biomass available at a given location was generally not sufficient to support ongoing human consumption." .
		App F	3.4.5	30		CE	DD	Delete following statement, "While it is unlikely that fish from only one river mile would be consumed over a lifetime,…"

		App F	3.5.1.5	34		CE	DD	In the tables where beach sediments are being evaluated as opposed to in-water sediments, it would be useful to label the tables as beach sediments (instead of just sediments).
		App F	3.5.1.5	34		Edit	DD	~~In the tables where beach sediments are being evaluated as opposed to in-water sediments, it would be useful to label the tables as beach sediments (instead of just sediments).~~ The three fisher names (Non-tribal recreational fishers, Native American fisher, and Non-tribal Non-recreational fisher) are very confusing. In previous documents they were Recreational, Native American fisher, and Non-tribal fisher (not much better). We may want to think of some other names to distinguish these groups.
		App F	3.5.1.5	35		CE	DD	It is worth noting in the text that there is a fish advisory for PH now. However, some language should be added to make it clear that fish advisories are often not heeded. Also, we are interested in potential future fish exposures assuming that the advisories can be lifted.
		App F	3.5.1.5	35		Edit	DD	In the 2nd paragraph under non-tribal fish consumption, the sentence, "Shellfish consumption is evaluated separately in this Round 2 HHRA, so using ingestion rates that include shellfish to evaluate fish consumption is overly conservation" is incorrect. Separate evaluation simply produces two numbers that provide some idea of the range of possibilities for exposure and risk. The important issue is that in defining cleanup criteria, PRGs will be developed separately for fish and shellfish.
		App F	3.5.1.5	35		Edit	DD	In the last paragraph on this page, the second, third, fourth and last sentences are statements as to why the 17.5 g/day and 142 g/day are overly conservative for non-tribal fishers. These statements should be removed. The uncertainties with the fish consumption rates should be dealt with in the Uncertainty Section and include not only why these rates may be conservative but why they may be non-conservative as well. (See suggested language in Uncertainty Section comments).
		App F	3.5.1.5	37		Edit	DD	The following two sentences should be removed, "The CRITFC Study reported that none of the respondents fished the Willamette River for resident species and at most, approximately 4 percent fished the Willamette River for anadromous species. Therefore, the use of this parameter represents a very conservative assumption for this exposure pathway."
		App F	3.5.1.5	37		Edit	PH/DD	The following language should be included to accurately reflect the importance of theh Willamette River to the tribal fishery in relationship to the Portland Harbor Site: *"For thousands of years, the Willamette River has been an important ceremonial and subsistence fishery (i.e., salmon, lamprey, and sturgeon) for Native American tribes of the region. Native Americans continue to rely on the Willamette River for subsistence. For example, tribal members conduct a ceremonial spring Chinook fishery and continue to harvest lamprey at Willamette Falls annually.* *Because Willamette Falls is the last viable source of lamprey in the basin, the annual lamprey harvest is of critical importance to the tribes. Therefore, cleanup and restoration measures will need to be managed for maximum use by tribal fisheries and to meet their ceremonial and subsistence needs for lamprey and spring Chinook."*
		App F	3.5.1.5	37		Edit	DD	The last paragraph suggests that "the ingestion rate for salmonids is 67 g/d". It would be more appropriate to use the words "anadromous salmonids".
		App F	3.5.1.5	38		Edit	DD	The language on the conservativeness of the shellfish ingestion rates in the two sentences beginning with, "Again, Portland Harbor…" and issues related to biomass should also be removed. Uncertainties should be discussed in the Uncertainty Section.
		App F	3.5.2.1	39		CE	DD	The first paragraph on this page discusses the use of the assumption that 10% of the total arsenic in fish is inorganic. The fact that shellfish may have a higher percentage of

								inorganic arsenic should be briefly discussed here (referring to the Duwamish data) and readers should be referred to the Uncertainty Section for the analysis previously sent to us by Laura Kennedy for shellfish.
		App F	3.5.2.2			CE	DD	~~I recommend that~~ Include more explanation ~~be included~~ in Section 3.5.2.2 as to how chemicals without absorption factors were treated. Also, the lack of dermal adsorption factors for some chemicals should be addressed in Section 7.2.2.1 of the Uncertainty Section, Exposure Parameters for Sediment Exposure Scenarios.
		App F	4.6	44		CE	DD	The latest Toxicity Equivalence Factors (TEFs) for chlorinated dioxins/furans and dioxin-like PCBs should be used (see Table 2-6 comments).
		App F	4.6	44		CE	DD	A discussion of carcinogenic PAHs and their Relative Potency Factors should be added to this section. For the risk characterization of carcinogenic PAHs, the total risk from these compounds should be added and included as a separate line in the Risk Characterization tables. In addition the EPC tables should include a line that shows the total TEQs from the sum of the chlorinated dioxins/furans and dioxin-like PCB congeners; the Risk characterization tables should include the total risk from Dioxin-like PCB congeners and dioxin/furan congeners. These results may be important in determining if remedial goals are needed for protection of human health for carcinogenic PAHs and total TEQ.
		App F	5.0	46		Edit	DD	Remove the words "upper-bound" before the word "probability" as some of the slope factors are maximum likelihood estimates
		App F	5.1.1			Iss	DD	Before endpoint specific HIs are calculated for the HHRA, the LWG should submit a brief tech memo that describes the endpoint(s) that will be used for each chemical and which chemicals will be summed. Please compare the chemical specific endpoints selected to those in Table 5-2 of the Region 10 EPA Columbia River Basin Fish Contaminant Survey Report and explain any differences.
		App F	5.1.2	47		Edit	DD	Replace the words "estimated upper bound" with "health protective estimate" in the first line of this page.
		App F	5.1.3			CE	DD	For those chemicals that were analyzed by more than one method, it would be useful to list the analytical methods used for each chemical and discuss why the EPC from a particular method was chosen.
		App F	5.2.3	55		CE	DD	Additional scenarios need to be added to reflect drinking water exposure for workers and for residents added to the HHRA.
		App F	5.2.5.1	57			DD	The following sentence should be removed, " For participants of the CRITFC Fish Consumption Study none fished the Willamette River for resident species and at most, approximately 4 percent fished the Willamette River for anadromous species" for reasons given in Page 37, Section 3.5.1.5 comment.
		App F	5.2.5.2	59		CE	DD	For child consumption, the high end of the fish tissue range should be an HI of 1000 from carp, not 900 from bass.
		App F	5.2.5.3			Edit	DD	This section, Upstream Fish Consumption, should be deleted as should Attachment F1. Possibly some comparison of "background" sediments to site sediments could be included here to demonstrate the point that since sediments from areas that are considered "background" for the PH site are contaminated (although at much lower levels), fish would also expected to be contaminated at much lower levels. This language should be discussed with EPA before including it in the HHRA.
		App F	5.2.6	60		CE	DD	The uncertainty that several clam samples were not analyzed for all chemicals should be added to this section. For example, there are no data on chlorinated dioxins/furans or dioxin-like PCB for the clam samples collected off of Arkema, the site which had the highest values for these contaminants in other species (sculpin and crayfish).
		App F	5.2.8.3	62-3		CE	DD	~~The maximum detected concentration of lead in shellfish is 1320 ug/kg which is above the level of concern (700 ug/kg) calculated for the Columbia River Basin Fish~~

								~~Contaminant Study. This section should list those clam and crayfish composites that are above the 700 ug/kg value. In addition, it would be useful to see a comparison of the 95% UCL on the mean to the value of 700.~~
		App F	5.2.8.3	62-63		Comm	DD	The maximum detected concentration of lead in shellfish is 1320 ug/kg which is above the level of concern (700 ug/kg) calculated for the Columbia River Basin Fish Contaminant Study. This section should list those clam and crayfish composites that are above the 700 ug/kg value. In addition, it would be useful to see a comparison of the 95% UCL on the mean to the value of 700. The equation for z = ln(10) – ln(PbBf)/ln(GSD) is quoted from the CRITFC document. The correct form of the equation should be: z = [ln(10) – ln(PbBf)]/ln(GSD) This is likely a typo in both documents, and not a calculation error. Rather than say that the probability is calculated using the z value, it would be more helpful to include the equation in the RD 2 Report using the normal probability function (and assuming that the data are normal after a log transformation): p=Φz[(ln(10)-ln(PbBf))/(ln(GSD)] Because this is the probability of the fetal blood lead level being equal to or greater than 10 ug/dl, the probability of fetal blood lead level being less than 10 ug/dl is: ~~P~~p' = 1 – p Alternatively, the probability could be calculated directly as: p'=Φz[(ln(PbBf)-ln(10))/(ln(GSD)] Page 64, Section 5.3 - The sentence starting with, "As a result, the iCOCs include chemicals ...." should be deleted. It does not provide any useful information and uses judgmental language (i.e., "infrequently", "relatively low risks", highly uncertain"). Also, given a site like PH with multiple sources of contamination, the term "infrequent' has little meaning.
		App F	5.3	64		CE	DD	The sentence starting with, "As a result, the iCOCs include chemicals ...." should be deleted. It does not provide any useful information and uses judgmental language (i.e., "infrequently", "relatively low risks", highly uncertain"). Also, given a site like PH with multiple sources of contamination, the term "infrequent' has little meaning.
		App F	6.0			NT	DD	The majority of this section should be moved to the main body of the HHRA. EPA comments on Section 6 below should be incorporated into the applicable sections of the HHRA
		App F	6.0			CE	DD	EPA did not agree to limit screening of TZW and SW for only those chemicals with a detection frequency greater than 5%. Given the limited sampling locations, the number of different types of sources at the site, and the possibility for localized areas of media contamination, eliminating chemicals of concern based upon a low frequency of detection is not supportable.
		App F	6.0			CE	DD	For Sections 6.1.1 and 6.2.1, each chemical that fails the screening against WQC should be retained as an iCOCs rather than eliminating those that have been identified as iCOCs

								for fish or shellfish.
		App F	6.0			Edit	DD	Remove the last three~~two~~ sentence~~s~~ in the first paragraph beginning with "This section presents…"and ending with, "for these exposure pathways."
		App F	6.1.1			Edit	DD	Screening of SW Data for the Biota Consumption Pathway – Add the following sentence at the end of the first paragraph, "However, in some instances, biota data may not be available from all areas where surface water are potentially contaminated."
		App F	6.1.1			Comm	DD	SW data were screened against the WQC based upon a fish consumption rate of 17.5 g/day. EPA directed the LWG to screen SW against WQC based upon 175 g/day.
		App F	6.1.1	66			DD	Screening SW against WQC -To the end of the last sentence in the first paragraph (beginning with "If the chemical was detected in tissue…) add the following (after "to derive the human health WQC") "or that biota data are not available from co-located areas of high surface water contamination."
		App F	6.1.1	66		CE	DD	The list of SW chemicals (17 of them) that screened in as iCOCs should be included in the first full paragraph on this page (i.e., the results from Table 6-1) as should a figure (similar to Figure 6-1) that shows locations exceeding the AWQC. Chemicals should not be eliminated as iCOCs just because they are present in biota as iCOCs.
		App F	6.1.1	66		Edit	DD	Remove the last paragraph on Section 6.1.1. as the screening of SW against WQC in itself provides important information as discussed above in the comments to Section 6.0.
		App F	6.1.2	66		CE	DD	Screening of SW Data for Drinking Water – EPA Region 6 PRGs should be used for screening in the BHHRA since Region 9's are no longer updated.
		App F	6.2	67		NT	DD	It should be noted that EPA has not agreed to the framework shown in Figure 6-2. This should be replaced with the flowcharts included as Attachment 1..
		App F	6.2	67		NT	DD	All unfiltered TZW data should be evaluated including TZW data collected at depth
		App F	6.2	67		Iss	DD	Although it is true that the TZW data used for the screening in this section were from targeted areas of contaminated GW discharge, it has not been shown that they represent "the worst case scenario for human health from exposure to TZW". The TZW studies are conservative in that they were designed to maximize the potential for detections of COIs in TZW by sampling at the time of maximum GW flux, targeting GW discharge areas, and utilizing upland GW data to identify areas where the highest COI concentrations were likely. However, the analyses were done only once per site so the data are limited both spatially and temporally and, therefore, limited for quantitative analyses of risk. Also, there are areas of the site that have may have high sediment contaminant levels and that are discharge areas but have no TZW measurements. Therefore, there are no data to show that TZW in the areas sampled by the LWG are "worst case".
		App F	6.2.1.1			CE	DD	Screening against WQC (This section will no longer be included in Section 6 as it will be added to the HHRA section) -The list of TZW chemicals that screen in as COPCs should be included in the discussion of this screening step (i.e., the results from Table 6-1) as should a figure (similar to Figure 6-1) that shows locations exceeding the WQC. Chemicals should not be eliminated as COPCs in TZW just because they are present in biota as COCs because the screening of TZW against WQC in itself provides important information and because biota data may not necessarily be correlated with sites where TZW data are available. While a discussion like that for chrysene, manganese, thallium is useful on a location specific basis, it should not be used to eliminate COPCs as COCs in TZW.
		App F	6.2.1.2	68		CE	DD	Because VOCs and cyanide were not measured in fish tissue, these chemicals were not eliminated as iCOCs in Section 6.2.1.1. Rather, this section concludes that the AWQC for VOC are "highly uncertain". This uncertainty is stated to rise from the fact that the Veith equation used to estimate BCFs from log Kow data used 7.6% lipid since this was the lipid content of the species used in the tests. For the WQC, this lipid value was adjusted downward to 3.0 % to reflect the weighted average percent of lipid in freshwater

								and estuarine fish and shellfish consumed in the US. The adjustment factor from BCF values measured or predicted in the Veith et al. 1979 paper (where many of the BCFs in the human health section of older water quality criteria documents come from) is simply (measured lipid percentage / 7.6%), where 7.6% was the mean lipid content of the fish used by Veith et al. 1979 to obtain their log BCF - log Kow regression line. The BCF predictions from the log BCF - log Kow regression in Veith et al. 1979 have been compared to BCF predictions from a number of other log BCF - log Kow regressions by Devilliers et al. (1995) and found to be, on average, just as good as predictions from other regressions for the range of log Kow values between 2 and 6 (the limits of what Devilliers et al. studied). The Veith et al. 1979 regression has an advantage over some of the other published BCF - Kow regressions in that the lipid content of the fish used in the bioconcentration study is known, allowing adjustment of a measured BCF in fish with 7.6% lipid to an estimated BCF in fish with different lipid content. Not all other BCF - Kow regressions allow you to do this adjustment of measured BCFs to estimated BCFs for fish with different lipid content.
		App F	6.2.1.2	68		CE	DD	This section evaluates the fish consumption AWQC for benzene, chlorobenzene, chloroform, cyanide, trichloroethene, and vinyl chloride and concludes that these AWQCs are "highly uncertain." Because EPA has developed an approach that considers both tissue levels and TZW exceedance of fish consumption AWQCs in the HHRA and because none of the criticisms described in this section were utilized, Section 6.2.1.2 should be deleted in its entirety.
		App F	6.2.1.3	70		CE	DD	In this section, an adjustment factor of 5000 is applied to the maximum TZW concentration to "account for the differences in uptake of chemicals for TZW versus SW for shellfish". Using this adjustment factor, the list of 27 COIs that screened in (because their max values in TZW exceeded the WQC) was reduced to 2 chemicals, total DDT and total DDD. The first adjustment factor of 10 is the assumed TZW/SW ventilation ratio for shellfish. EPA does not agree with use of this default ventilation factor since the concentrations that biota are exposed to are dependent upon many factors (e.g., location of shellfish to and within sediment, concentration and loading of TZW). The second adjustment factor is 100 and is based upon using an acceptable cancer risk level of 10^{-4} rather than 10^{-6}. This is not acceptable as ODEQ's regulations use an acceptable risk of 10^{-6} for individual chemicals and EPA's Superfund guidance uses a cancer risk of 10^{-6} as a "Point of Departure". The third factor of 5 assumes that shellfish consumption is 3.3 g/day rather than 17.5 g/day.. This is not acceptable for crayfish as the RME ingestion rate for crayfish on a composite by composite basis is 18 g/day. However, as discussed in a previous comment, EPA proposes using 18 g/day as the RME ingestion rate for clams but it would be applied over a mile length of the river on each side (to address the resource issue). The discussion could include this as potential uncertainty in applying WQC from a localized TZW sample to clams. Another uncertainty for crayfish exposure that should be discussed is the fact that loading of bioaccumulatives may not be conservatively addressed by screening against WQC as they are based upon bioconcentration, not bioaccumulation.
		App F	6.2.2	71		Iss/Q	DD	Region 6 screening levels should be used for screening in this section since Region 9's are no longer updated. The Region 6 screening values that are based upon non-cancer endpoints must be divided by 10. As now written, 49 chemicals (representing several different chemical classes) screened in as potential COPCs by screening the maximum concentration of each chemical detected in TZW against Region 9 tapwater PRGs and EPA MCLs. Several of these exceedances were orders of magnitude above the screening values. Surface water concentrations were modeled using loading estimates and the

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								model presented in Appendix D. This modeling is being reviewed as a part of Appendix D. The conclusions from the use of all unfiltered TZW data with the new screening levels and any revisions to the modeling should be incorporated into Section 6.
		App F	7.1.1	74		Edit	DD	Delete the first sentence in the second paragraph, "While only the target species were included in this Round 2 HHRA, the number of species evaluated is three times more than recommend by EPA guidance (2000b)." It is not clear how the "three times " was derived as the Tier 2 Intensive Studies discussed in this guidance recommend collection of several target species in three different size classes. Also, this guidance was developed for collecting data for use in developing fish advisories, so the DQOs are very different (e.g. source identification and development of remedial goals are not DQOs for health advisories).
		App F	7.1.3	75		Edit	DD	At the end of the first paragraph, the last three sentences starting with, "Depending on the species,…" should be removed and replaced with data from the Round 3 analyses of fillet and WB for the same fish. If the Round 1 data are to be cited in the RI HHRA, the concentrations of PCBs in fillet and whole body samples of carp in each 3 mile segment should also be added to the discussion on bass and bullhead. In addition, the fact that methyl mercury preferentially accumulates in muscle tissue should be discussed.
		App F	7.1.3	75		Edit	DD	Delete the last sentence in the last paragraph starting with "Given this uncertainty…".
		App F	7.1.4			Issue	DD	This section is a bit misleading especially for biota. For example, Table 7-2 shows only 12 analytes whose detection limits are above ACGs for biota. Because bivalves were included with the fish tissue in this analysis, it isn't clear that for PAHs in fish tissue, the detection limits were almost always above the ACGs. Need to account for fact that fish metabolize PAHs.
		App F	7.1.5	76		CE	DD	A table should be added showing those Round 2 clam samples (e.g., including but not limited to samples FC 9, 16, 18, 23, 26, 29, 32, and 33) that did not have all analytes and/or groups of analytes analyzed. The missing analytes should be listed as well and the rationale provided as to why these analytes are missing (e.g. lack of sample quantity).
		App F	7.1.6	77		Iss	DD	Many of the comparisons of PBDEs between the ODHS dataset and other studies do not seem appropriate (Table 7-5). This is especially true for the salmon and lamprey in the ODHS study (anadromous species) that are compared to primarily resident fish (e.g., bass, whitefish) or fish that are essentially resident (Lake Michigan salmon). Salmon and lamprey should only be compared to other anadromous species. The PBDE levels for sturgeon in the ODHS data set are about an order of magnitude higher than the salmon and lamprey ODHS data, are more comparable to resident species from other studies. It also isn't clear what types of samples are being compared (e.g., whole body versus fillet versus fillet without skin). New RfDs are being developed for PBDEs. These new RfDs, which have undergone peer review and are now being reviewed by OMB, should be used in the HHRA with data from both the ODHS study and the Round 3 analyses from Region 10 EPA's lab. Further discussion is needed to decide how the results of the PBDE analyses will be presented in the HHRA.
		App F	7.1.6	77		Iss	DD	VOCs were not analyzed in fish tissue. The statement is made in this section that based upon the analysis done in Section 6.2.1.3 (5000X dilution factor for TZW to SW based upon ventilation rate, 10-4 rather than 10-6 and 3.3.g/day rather than 18 g/day), "VOCs in TZW would not result in unacceptable risk for fish or shellfish consumption". This statement is not supportable given the lack of tissue data and the fact that 11 VOCs (max values) exceed their WQC in TZW, some by several orders of magnitude. For reasons cited above, EPA does not agree with the use of the 5000X dilution factor.
		App F	7.1.7			NE	DD	EPA does not agree with the statements in this section that imply that the biota

								compositing scheme was overly conservative because, "each species may span a home range much larger than that used for compositing". This is particularly true for bass. Most of the tagging data suggest that bass stay within about a mile home range or less and may cross the river infrequently - the compositing scheme in Round 1 combined fish from both sides of the river into each river mile composite. The Round 3 data on bass may eliminate some of the uncertainty.
		App F	7.2.2	79		Edit	DD	In the first sentence on this page, the following change should be made…"the RME scenarios represent the ~~highest~~ reasonable maximum exposures that could occur at a site under current and future conditions assuming that land and river uses do not change."
		App F	7.2.2.1	79		Edit, CE	DD	~~In the first sentence, fourth paragraph, change, "likely to overestimate the risks" to "likely to be a conservative estimate of the risks."~~ The uncertainties due to land use changes which may make some beaches and/or in-water sediments more or less accessible and/or inviting should be discussed.
		App F	7.2.2.2	80		Edit	DD	~~In the first sentence in the third paragraph, change, "likely to overestimate the risks" to "likely to be a conservative estimate of the risks."~~
		App F	7.2.2.3	80		Edit	DD	Remove the following from the first sentence in this section, "and may not be representative of actual tissue consumption occurring within the study area."
		App F	7.2.2.3	80		CE	DD	Although upper percentiles data from the fish consumption surveys cited were used for the PH HHRA, additional information should be added to this section to include the uncertainties that might under predict fish consumption based upon these studies: (1) The Columbia Slough Study was a creel survey. As a result, it provides a very rough estimate of fish consumption rates due to many reasons, including but not limited to: • Willingness of anglers to participate (e.g., minority groups may fear talking to outsiders, particularly individuals that could be perceived as being authorities). • Communication. If a substantial number of anglers consist of 1st or 2nd generation ethnic minorities, then language may be a barrier. • Discrepancy between individuals that catch fish and prepare meals. Men generally fish but women generally prepare seafood and are much more familiar with the mass of seafood consumed. • Difficulty in translating from the items inspected in an angler's basket to portion sizes and amounts consumed since this requires assumptions about edible portions and cleaning factors. • Lack of a random or representative sample. Interviewers get who they encounter. • Timing and seasonality of interviews. • Weather conditions may bias the results of any day's interviews. (2) The CRITFC Fish Consumption Survey was done by interviewing only four of the six tribes who are party to the PH RI/FS. It is not clear how this would impact the fish consumption rate for tribal populations used in the HHRA which was based upon the CRITFC study. Also, some published articles have suggested that the fish consumption rates in the CRITFC Study are biased low for tribal members because: • Tribal members who have a traditional lifestyle (and likely a higher

								consumption rate) would have been unlikely to travel to the tribal offices that were used for administering the CRTIFC fish consumption interviews. • The fish consumption rates for some tribal members that were perceived as being outliers (consumption rates were too high) were dropped form the CRITFC data before the consumption rates were calculated. • Current fish consumption rates may be suppressed and, therefore, do not reflect the potential for the higher consumption rates if fishery resources improve or if the water body becomes less contaminated. In addition, the language in the first partial paragraph on page 81 cites tribal fishing statistics from the CRITFC study for the Willamette River should be qualified with the uncertainty that future tribal fishing habits may change after the site is remediated or due to other circumstances.
		App F	7.2.2.3	80		CE	DD	~~Although upper percentiles data from the fish consumption surveys cited were used for the PH HHRA, additional information should be added to this section to include the uncertainties that might under predict fish consumption based upon these studies. Key uncertainties include:~~ ~~•In the tables where beach sediments are being evaluated as opposed to in-water sediments, it would be useful to label the tables as beach sediments (instead of just sediments).~~ ~~•Also, the three fisher names (Non-tribal recreational fishers, Native American fisher, and Non-tribal Non-recreational fisher) are very confusing. In previous documents they were Recreational, Native American fisher, and Non-tribal fisher (not much better). We may want to think of some other names to distinguish these groups.~~ ~~•Willingness of anglers to participate (e.g., minority groups may fear talking to outsiders, particularly individuals that could be perceived as being authorities).~~ ~~•Communication. If a substantial number of anglers consist of 1st or 2nd generation ethnic minorities, then language may be a barrier.~~ ~~•Discrepancy between individuals that catch fish and prepare meals. Men generally fish but women generally prepare seafood and are much more familiar with the mass of seafood consumed.~~ ~~•Difficulty in translating from the items inspected in an angler's basket to portion sizes and amounts consumed since this requires assumptions about edible portions and cleaning factors.~~ ~~•Lack of a random or representative sample. Interviewers get who they encounter.~~ ~~•Timing and seasonality of interviews.~~ ~~•Weather conditions may bias the results of any day's interviews.~~ ~~•Tribal members who have a traditional lifestyle (and likely a higher consumption rate) would have been unlikely to travel to the tribal offices that were used for administering the CRTIFC fish consumption interviews.~~ ~~•The fish consumption rates for some tribal members that were perceived as being outliers (consumption rates were too high) were dropped form the CRITFC data before the consumption rates were calculated.~~ ~~•Current fish consumption rates may be suppressed and, therefore, do not reflect the potential for the higher consumption rates if fishery resources improve or if the water body becomes less contaminated.~~ ~~In addition, the language in the first partial paragraph on page 81 cites tribal fishing~~

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								~~statistics from the CRITFC study for the Willamette River. These statistics should be removed as future tribal fishing habits may change after the site is remediated or due to other circumstances.~~
		App F	7.2.2.3	81		CE	DD	It should be noted that The 99th percentile rate from the nationwide study (USDA Continuing Survey of Foods by Individuals, CSFII) of 142 g/day (as calculated in *USEPA Estimated Per Capita Fish Consumption in the United States*, freshwater and estuarine fish and shellfish) was used as the high non-tribal ingestion rate in the HHRA. The 90th percentile rate from the same study (17.5 g/day) was used as the low non-tribal ingestion rate in the HHRA. Concerns have been expressed regarding the methodology used by EPA to establish these fish consumption rates which are also recommended as default AWQC subsistence fish consumption rates in EPA's WQC Human Health Methodology guidance. Criticisms of these rates have been raised because they are based on *per capita* consumption rates from the general population - that is, "fish consumption" rates that include fish consumers and fish non-consumers alike. For example, whereas the 90% value for fish consumers is 200 g/day, the 90% value once fish non-consumers are also included is about 18 g/day; similarly, whereas the 99th percentile value for fish consumers is 506 g/day, the 99th percentile value drops to approximately 143 g/day when non-consumers are added.
		App F	7.2.2.3	81		CE	DD	EPA disagrees that the clam consumption exposure scenario is unjustified for the following reasons: • Information from the summary of the Linnton Community Center fish consumption survey and health education (funded by OR DHS SHINE program) should be included as confirmation that shellfish from the PH site are being collected and consumed. In addition, crayfish are permitted to be collected for both recreational and commercial purpose in the WR Basin. There is no information that the PH is not being used by sports and commercial fishers to collect crayfish. The only area of the site that has warnings about harvesting is that area off of McCormick and Baxter where the Oregon Department of Human Services, Office of Public Health, maintains a health advisory for crayfish harvesting within 1,000 feet of the site. • The high and mean shellfish consumption rates that are used in the HHRA are from *USEPA Estimated Per Capita Fish Consumption in the United States*, and, like the fish consumption rates from this study and used in the HHRA are based on *per capita* consumption rates from the general population - that is, consumption rates that include shellfish consumers and non-consumers alike. Consumer-only rates were not calculated in the EPA document for shellfish alone, but it is likely that they are higher for consumers only compared to the rate based on both consumer and non-consumers. • Also, it is stated in the RD2 HHRA, in the EPA document, "shrimp, which is not found within the Study Area, accounted for more than 80 percent of the shellfish consumed. Crayfish accounted for less than 1 percent of the shellfish consumed, and freshwater clams were not even included in the nationwide survey". This does not consider the fact that if certain types of fish or shellfish are not available in a water body, fishers (including transients) are likely to substitute alternative local types of shellfish.
		App F	7.2.2.3	81		Edit	DD	In the last paragraph of this section, change "are likely to result in overestimating the risks" to "provide a health protective estimate of the risks".
		App F	7.2.3.1	82		CE	DD	The statement is made that, "However, in cases where the DLs were above ACGs and the chemical was detected infrequently, use of one-half the DL could impact the risk results. In these cases, additional evaluation of the method used to estimate non-detect results

								may be warranted." It is not clear what method would be used or for which cases. See general comment above regarding ProUCL and how to evaluate non-detected results.
		App F	7.2.3.1	82		CE	DD	There is no discussion on the uncertainty in using only 5-10 samples to calculate the 95% UCL on the mean. See general comment above regarding estimating a 95% UCL on the mean.
		App F	7.2.3.3	83		CE	DD	In EPA 2000b, while most of the studies showed that there were percent reductions in PCBs due to cooking, one study actually showed a net gain. In addition, the impact of cooking on mercury should be summarized here.
		App F	7.2.3.4			Edit, CE	DD	Remove the statement, "so use of 10% for inorganic arsenic is likely overestimates the EPC for inorganic arsenic". We have no data from this site on the actual inorganic arsenic levels in fish. In addition, the Duwamish data for inorganic arsenic in bivalves should be summarized here and the uncertainty previously provided to EPA by Laura Kennedy should be included.
		App F	7.3	84			DD	In the first sentence, replace the words "which are established by state and federal policy, are deliberate overestimates of the potential dose-response". Make the following modification, "actual risks at this site ~~are likely to~~ could be lower than the potential estimates calculated in this HHRA". [ERIC – add strikeout]
		App F	7.3.1			CE	DD	Rather than discuss the uncertainty in using the 1997 WHO TEFs, the 2005 TEFs should be used for the RI HHRA.
		App F	7.3.2	85		Iss, CE	DD	We did not include a scenario for child consumption of shellfish which could be an issue for clams as PAH levels are highest in clams, especially at and downstream of GASCO. There doesn't appear to be a shellfish consumption estimate for ages less than 18 in USEPA Estimated Per Capita Fish Consumption in the United State; however, a childhood rate could be developed using the same assumptions that were used for the fish consumption rates.
		App F	7.3.5	86		NT	DD	It should be noted that the Arkema site has a chromium VI plume in groundwater that is discharging to surface water.
		App F	7.4.2	87		Dec	DD	ERIC – *I think we are OK not including this now.* Need to decide if the following Yakama comment is addressed adequately in this section: " . . . In should be noted in the uncertainty section that cumulative risks of uplands and river exposures would likely lead to a much higher estimation of overall risk."
		App F	7.4.3	87-88		Edit	DD	Following changes should be made to text in section 7.4.3: Arsenic and mercury were found to result in risks greater than 10^{-6} or an HQ of 1 for at least one of the exposure scenarios evaluated in this HHRA. Metals are naturally occurring chemicals and may be present in tissue, water or sediment due to background concentrations~~. For example, the concentrations of arsenic and mercury in fish tissue samples collected within the Study Area were compared with concentrations in fish tissue samples collected at upstream locations and found to be similar~~. For beach sediment, the exposure point concentrations ranged from 0.7 to 9.9 mg/kg and are generally consistent with the default background soil concentration for arsenic of 7 mg/kg used by DEQ (WDOE 1994). In addition to naturally occurring metals, anthropogenic background may contribute to the overall risks. ~~Attachment F1 presents the evaluation of risks from consumption of upstream fish tissue. These risks were calculated using the same exposure assumptions as were used for calculating risks from consumption of fish tissue collected within the Study Area. The evaluation of risks from upstream tissue demonstrates that upstream contributions result in cumulative cancer risks that exceed the target risk of 10-4 and noncancer hazards that exceed the target HI of 1.~~ While risks were presented in this Round 2 HHRA without accounting for

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								contributions from background, it is important to recognize that background concentrations may result in unacceptable risks based on the exposure assumptions used in this Round 2 HHRA. ~~The contribution from background is also important to consider in establishing remedial goals, as it may not be possible to achieve EPA's target risk levels.~~
		App F	7.5	88		Iss, CE	DD	Please note the recommended changes presented in EPA comments on Table 7-6 below.
		App F	Tables			Edit	DD	For all EPC tables showing dioxin-like PCB TEQ and dioxin/furan TEQ, an additional line should be added that shows the sum of these. This was done in the Round 1 EPC Tech Memo at EPA's request and it should be done in these tables as well. In addition, for the Risk Characterization tables, total risk from carcinogenic PAHs and from all TEQ (dioxin-like PCBs and dioxins/furans) should be included on the tables. Several tables appear to have missing information in the "Non-Detects" and "Total Samples" columns.
		App F	Tables 2-3 and 2-5			Edit, CE	DD	The SW and TZW data used for both the RD 2 HHRA and the screening in Section 6 should be included in these tables and it should be clear which data sets used for each.
		App F	Table 2-5			CE	DD	For the TZW in Table 2-5, it is not clear here or in the text how the TZW data used for screening were selected. For example, was the max value from any of the TZW data sets (filtered or unfiltered) used?
		App F	Table 2-6			Edit	DD	The 2005 WHO TEFs should be substituted here.
		App F	Table 2-8			Edit	DD	"Residential Use Beaches" should be changed to Beaches Used for Recreation, by Transient, and/or by Fishers
		App F	Table 2-9			Incon	DD	Some of the maximum values in this table do not match those in Table 6.1-1 in the main body of the Round 2 Report (lower by 2x or so). This may be because different data sets were used (e.g., QA1 versus QA2). This should be included in footnotes here and in Table 2-2 (and throughout the RD 2 Report) so it's clear why data tables may differ. The RD2 Report should include a discussion or justification showing that use of ODEQ's RBC for transformer mineral oil for evaluating heavier oils is appropriate and protective.
		App F	Tables 2-1 and 6-1			CE	DD	These tables include the surface water data used for the RD 2 HHRA (Table 2-10) versus that used for the screening of surface water in Section 6 (Table 6-1). Also, only PCB congener data were used. A short discussion should be included to show what the difference would be if the Aroclor SW data were also used in addition to total congeners.
		App F	Table 3-1			CE	DD	The LWG would need to add use of surface water as a drinking water source (i.e., residential and/or industrial/commercial) if these are added to the BHHRA. However, only arsenic and possibly lead would be included as COPCs in the HHRA in these pathways.
		App F	Table 3-1			CE	DD	The footnote to Non-tribal Fisher is "non-tribal fishers include three different fish ingestion rates and 2 different fishing frequencies." Make sure this is clear in the text.
		App F	Table 7-6			CE	DD	Table 7-6 – Qualitative tables of uncertainties -need to discuss with full group, see comments on page 88 above. ERIC – *Was this intended to be a discussion with the LWG or the agency team? Here are my suggestions:* As now written, a ranking of "low" under Level of Protection/Conservatism may imply that the assumption is health protective to a small degree. In fact, some of the assumptions are not health protective, and may underestimate risk. For example, if we did not analyze for certain chemicals or if the ones that were detected do not have toxicity values, we are not quantifying the potential additional risks.

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								One possible revision is to separate the evaluation of Level of Protection/Conservatism into two columns: "Likelihood That Risks are 1) Underestimated, or 2) Overestimated. The low/medium/high designations can be added to either column. The "overestimated" likelihoods are reflected in the current table. A few of the assumptions should switch to "underestimated".
		App F	Figure 3-1			CE, Iss	DD	EPA's December 2, 2005 Identification of Round 3 Data Gaps Memorandum included a Conceptual Site Model (CSM). This CSM should be used as the basis for the HHRA. Specific comments on the Figure 3-1 are provided below: Release Side: Figure 3-1 represents a simplified version of the release model focused on loading terms. However, certain key processes are not presented such as sediment resuspension, depsorption and scouring. EPA recommends retaining the detail in the release model but making it consistent with the loading terms being considered in the Portland Harbor RI/FS. In addition, groundwater transport (dissolved/NAPL) should be changed so that particulate and colloidal contaminants are included. Exposure Side: The following changes should be made reconcile differences between the EPA developed CSM and the Figure 3-1: 1. Under Exposure Media, TZW should be included as a source to SW. 2. The ingestion of SW as drinking water by on-site worker and residents should be added back into the CSM 3. Dock-workers and in-water workers do not include exposure to SW as a "potentially complete but evaluated under a different receptor category". 4. Recreational fishers and Non-tribal fishers have been combined into Non-tribal fishers and the footnote explains that non-tribal fishers include 3 different fish ingestion rates and 2 different fishing frequencies. Name changes may need to be made to eliminate confusion among these different receptors. 5. Please explain why the footnotes in EPA's CSM were removed. In addition further discussion is required to explain why certain exposure pathways are evaluated and others are not. The rationale should be included. Pathways not evaluated should be addressed in the uncertainty section.
		App F	Figure 5-1			CE	DD	Beach Sediment, Direct Contact for all Receptors, Exposure Areas of Cumulative Risk >10^{-6} or HI>1. The beach sample numbers from Figure 2-1 should be added to this figure so it is easy to correlate the discussion in the text with the figure. Also, it would be useful to use some additional colors as it is difficult to distinguish between the three shades of green and the orange/red.
		App F	Figure 5-1			CE	DD	Include ~~S~~separate figures showing (1) risks greater than 10^{-5} and HI>1[, and] (2) risks greater than 10^{-6} and HI>1 after subtracting risks from background arsenic (assuming a value of 7 for background from ODEQ bioaccumulative sediment guidance or a different value developed as a part of the RI)) ~~should be included~~.
		App F	Figures 5-2 and 5-3			CE	DD	In Water Sediment, Direct Contact for all Receptors - It would be useful to have a figure showing the In-Water Sediment Exposure Areas that are greater than a cumulative risk level of 10^{-5} and HI>1 for the RME exposure scenarios.
		App F	Figures 5-4 and 5-5			Iss	DD	Additional figures should be included. At a minimum, it would be useful to have a figure showing the shellfish collection areas that are greater than a cumulative risk level of 10^{-5} and HI>1 for the RME exposure scenarios.
		App F	Figures -			Iss	DD	There are no figures which show the Risk Characterization results for fish. These will

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			General					need to be added to the RI HHRA (see comments in Generic Issues).